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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,140	03/29/2004	Leopold Werner Kepplinger	P/2154-99	5415

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EXAMINER

MCNELIS, KATHLEEN A

ART UNIT	PAPER NUMBER
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1742

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/20/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/813,140

Applicant(s)

KEPPLINGER ET AL.

Examiner

Kathleen A. McNelis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 17-26 and 28-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 17-26 and 28-39 is/are rejected.
- 7) ☒ Claim(s) 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claims Status

Claims 1-12, 17-26 and 28-39 remain for examination wherein claim 4 is amended.

Status of Previous Rejections

The finality of the previous rejection is withdrawn in view of applicant's disclosure that the invention was commonly owned by the assignee of the present invention, Voest-Alpine Industrieanlagenbau GmbH at the time the invention was made, the certified translation of priority document Austria A 1533/2001 and the 1.132 declaration.

The previous rejections of claims 1-39 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn in view of applicant's 1.132 declaration.

The previous rejections of claims 15 and 16 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn in view of cancellation of the claims.

The previous rejections of:

- Claims 1-10, 13-26 and 31-39 under 35 U.S.C. 103(a) as being unpatentable over Zeller et al. (U.S. Pat. No. 6,569,954) or Zeller et al. (U.S. Pat. No. 6,569,377),
- Claims 11-12 under 35 U.S.C. 103(a) as being unpatentable over Zeller et al. (U.S. Pat. No. 6,569,954) or Zeller et al. (U.S. Pat. No. 6,569,377) as applied to claims 4 and 1 above and further in view of in view of Meissner et al (U.S. Pat. No. 6,488,770),
- Claims 27 and 28 under 35 U.S.C. 103(a) as being unpatentable over Zeller et al. (U.S. Pat. No. 6,569,954) or Zeller et al. (U.S. Pat. No. 6,569,377) as applied to claims 4 and 1 above and further in view of in view of Whipp (U.S. Pat. No. 5,531,424), and

- Claims 29 and 30 under 35 U.S.C. 103(a) as being unpatentable over Zeller et al. (U.S. Pat. No. 6,569,954) or Zeller et al. (U.S. Pat. No. 6,569,377) as applied to claims 4 and 1 above and further in view of in view of Whipp (U.S. Pat. No. 5,082,251) are withdrawn in view of claim amendment, cancellation, statement of common ownership and the certified translation.

The previous rejection of claims 4, 8, 10, 18, 21, 22, 24, 26 and 32 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4, 9, 10, 17 of U.S. Patent No. 6,336,954 (Zeller et al. '954) are withdrawn in view of amendment to the claim.

DETAILED ACTION

Claim Objections

Claim 28 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The limitation recited in claim 28 has been added to claim 4 by amendment.

Double Patenting

Claims 4, 8, 10, 18, 21, 22, 24, 26, 28 and 32 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4, 9, 10, 17 of U.S. Patent No. 6,336,954 (Zeller et al. '954).

Although the conflicting claims are not identical, they are not patentably distinct from each other for the reasons set forth in the 06/14/2006 office action.

Further, with respect to the amendments to claim 4:

In claim 1 of Zeller et al. '954 the temperature is adjusted to below 400 °C, or from 400 to 580 °C in the first fluidized bed zone (col. 9 lines 45-62), and the zone is passed through within a period of 10 minutes (col. 9 lines 63- col. 10 line 12). The ranges of below 400 °C or 400 to 580 °C overlaps the claimed range of between 350 and 550 °C; therefore, a prima facie case of obviousness exists (M.P.E.P § 2144.05). The range of within a period of 10 minutes is within the claimed range of up to forty minutes.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-10, 17-26, 28 and 31-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/09220 (based on English equivalent U.S. Pat. No. 6,569,954).

With respect to claims 4 and 28, WO '220 discloses a process for reducing iron oxide-containing material by fluidization through a plurality of fluidized bed reactors arranged in series wherein a supply of reducing gas is conducted through the series of fluidized bed reactors in the opposite direction from the iron oxide material [Zeller et al. '954 (col. 9 line 45 – col. 10 line 16)]. While not recited in WO '220, one of ordinary skill in the art would expect that the reducing gas does not contain O₂, since the preferred embodiment is disclosed to include adding unused reducing gas to the first fluidized bed zone, whereas an alternative embodiment involves adding oxygen or an oxygen containing gas to effect a partial combustion of the reducing gas [Zeller et al. '954 (col. 10 lines 44 – 54)]. While WO '220 does not recite the limitation that the maximum reduction speed in the first particulate pathway is 0.2 % oxygen removal per minute from oxygen bound to iron ore, examiner contends in the absence of evidence to the contrary that this would be the case, since WO '220 discloses that the measures taken in the invention result in the fluidized

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bed reactor no longer serving as a reducing zone but rather as a heating zone [Zeller et al. '954 (col. 7 lines 35-39)]. One of the measures taken in WO '220 is decreasing the temperature of the reducing gas [Zeller et al. '954 (col. 10 lines 26-28)]. Further, WO '220 teaches that one method for lowering the temperature in the first particulate pathway is by directly cooling by adding water [Zeller et al. '954 (col. 11 line 11 – col. 12 line 2)] which one of ordinary skill in the art would expect to also increase the degree of oxidation of the reducing gas.

WO '220 discloses that the temperature is adjusted to below 400 °C, or from 400 to 580 °C in the first fluidized bed zone [Zeller et al. '954 (col. 9 lines 45-62)], and the zone is passed through within a period of 10 minutes [Zeller et al. '954 (col. 9 lines 63- col. 10 line 12)]. The ranges of below 400 °C or 400 to 580 °C overlaps the claimed range of between 350 and 550 °C; therefore, a prima facie case of obviousness exists (M.P.E.P § 2144.05). The range of within a period of 10 minutes is within the claimed range of up to forty minutes.

With respect to claims 1-3, WO '220 [Zeller et al. '954 (col. 6 lines 58-67)] discloses that the temperature is raised to above 580 °C in the second reaction zone. The temperature range of above 580 °C overlaps the claimed ranges of at least 600 °C (instant claim 1), between 600 and 700°C (instant claim 2) and between 620 and 660°C (instant claim 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to raise the temperature in the second reactor of WO '220 to at least 600 °C or between 600 and 700°C or between 620 and 660°C, since WO '220 teaches equal utility for heating to a temperature above 580 °C.

With respect to claim 5, while WO '220 does not disclose that the reduction speed is maintained at 0.05 % oxygen removal per minute, examiner asserts in the absence of evidence to the contrary that this would be the case in the first particulate pathway zone, since WO '220 discloses that due to the measures taken in the invention result in the fluidized bed reactor no

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longer serving as a reducing zone but rather as a heating zone [Zeller et al. '954 (col. 7 lines 35-38)].

With respect to claim 6, the particulate material is iron ore [Zeller et al. '954 (col. 2 lines 40-55)].

With respect to claims 7, 8, 17, 18, 23-26, 31, 32 and 39 WO '220 discloses the addition of water or water vapor to reduce the temperature and increase the degree of oxidation of the reducing gas as discussed above regarding claim 4, which examiner contends would both reduce the temperature and increase the degree of oxidation of the reducing gas. Further, as discussed above regarding claim 4, WO '220 teaches that this measure results in the first particulate pathway acting as a heating rather than a reducing zone. Further, with respect to claim 25 and 26, WO '220 discloses recirculation of reducing gas used in the following zone [Zeller et al. '954 (col. 10 lines 29-33)], which one of ordinary skill in the art would expect to contain a higher amount of carbon dioxide than in fresh reducing gas due to the iron reduction process.

With respect to claims 9 and 10, WO '220 discloses that the temperature is adjusted using indirect cooling [Zeller et al. '954 (col. 10 lines 34-36)].

With respect to claims 19-22, WO '220 discloses that the reducing gas feed to the first reaction zone is subjected to cooling [Zeller et al. '954 (col. 10 lines 26-28)] wherein at least a portion of the gas is added fresh reducing gas [Zeller et al. '954 (col. 10 lines 44-48)]. It would have been obvious to one of ordinary skill in the art to use the added fresh gas to effect at least part of the desired cooling.

With respect to claims 33-34, WO '220 discloses that the reducing gas feed cooled and scrubbed then a portion of the gas is recycled from the second particulate pathway to the first particulate pathway [Zeller et al. '954 (col. 6 lines 1-6, Figs 2-6)].

With respect to claim 35 and 36, WO '220 teaches that gas removed (8) from the first particulate pathway reactor is mixed with reformed gas (13), scrubbed (16) and used as reducing gas feed (17). This gas travels upwards through the reaction zones back into the first zone (19, Zeller et al. '954 Fig 1).

With respect to claims 37 and 38, WO '220 does not recite that the reducing gas has a CO content under 20% or that the water vapor to carbonaceous gas components range from 2.5 to 5. However, WO '220 shows in [Zeller et al. '954 Figure 9] that the formation of magnetite vs. wustite is a result effective variable dependent upon at least the degree of oxidation, which is shown as a function of the amount of CO, water and carbonaceous gas component (expressed as CO and CO₂). It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the amount of CO, water and carbonaceous gas components as result-effective variables to affect the formation of magnetite and wustite (see M.P.E.P 2144.05, II, B).

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/09220 (based on English equivalent U.S. Pat. No. 6,569,954) as applied to claims 4 and 1 above and further in view of in view of Meissner et al (U.S. Pat. No. 6,488,770).

WO '220 is applied as discussed above regarding claims 4 and 1.

WO '220 does not disclose that the particulate is a fine particulate having a particle size of up to 12 mm and is treated in either the form of monograins or a grain strip.

Meissner et al. discloses a monocrystalline powder and monograin membranes produced from powders. Meissner et al. teaches that the powders are simply and inexpensively produced to a uniform size (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to treat monocrystalline or monograin powder as taught by Meissner et al.

in the fluidized bed reduction process of WO '220, since the powder can be simply and inexpensively produced to a uniform size as taught by Meissner et al. Further, one of ordinary skill in the art would expect the particles to be a fine particulate material with size of up to 12 mm, since the process of WO '220 is a fluidized bed.

Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/09220 (based on English equivalent U.S. Pat. No. 6,569,954 as applied to claims 4 and 1 above and further in view of in view of Whipp (U.S. Pat. No. 5,082,251).

WO '220 is applied as discussed above regarding claims 4 and 1.

With respect to claims 29 and 30, WO '220 is silent regarding the temperature of the particulate reaction zone, and therefore do not disclose that it is between 760 and 850 °C.

Whipp discloses a similar process wherein an improvement is made to the FIOR processing plant to achieve 90 + % metallization (abstract and Fig. 1). The gas temperature exiting the last one of the particulate pathway reaction zones ("bottom reducing reactor" in Whipp) is 765 ° C (State Tables, col. 22 bottom to col. 24 top, "bottom reducing reactor"), which is within the claimed range of between 760 and 850 ° C. It would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the last particulate pathway temperature at about 765 ° C as taught by Whipp, in the iron reduction process of WO '220 to achieve 90 + % metallization with substantially similar process equipment as taught by Whipp.

Response to Arguments

Applicant's arguments with respect to claims 1-12, 17-26 and 28-39 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen A. McNelis whose telephone number is 571 272 3554. The examiner can normally be reached on M-F 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAM
12/18/2006

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